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SECTION VII.—WEATHER AND DATA FOR THE MONTH.

THE WEATHER OF SEPTEMBER, 1917.

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PRESSURE AND WINDS.

The distribution of the mean atmospheric pressure over the United States and Canada, and the prevailing direction of the winds for September, 1917, are graphically shown on Chart VII, while the means at the several stations, with the departures from the normal, are shown in Tables I and III.

The month opened with pressure above the normal throughout the Atlantic Coast States, in the northern part of the Rocky Mountains and of the Great Plains region. It was below the normal in the upper Lakes Region and the Pacific Coast States. Elsewhere it was near the seasonal average.

Except for the occasional passage of a moderately low area across the country, the pressure was above the normal from the Rocky Mountains eastward during the first and second decades of the month. However, during the third decade it was below the normal much of the time in most northern districts; it was likewise low in the South during the latter half of the decade, due to the tropical hurricane which visited western Florida and southern Alabama on the 28th. (See pp. 457-9.) Throughout the central portions of the country the pressure was above the normal during the greater part of the last decade. The month closed with pressure below the normal from the Great Lakes to the eastern Gulf States and to the eastward, while it was generally above from the Mississippi Valley to the Rocky Mountain region. Elsewhere it was near the normal.

For September as a whole the barometric pressure averaged above the normal throughout the country, except in Florida, where it was slightly below. The departures were generally small, although somewhat pronounced in the upper Lakes Region and the upper Mississippi and the Missouri Valleys.

The distribution of the HIGHS and LOWS generally favored northerly winds throughout the Atlantic coast, eastern Gulf States, and the Ohio Valley; southerly winds were frequent in northwestern New England, over much of the Lakes Region, and generally from the Mississippi Valley to the Rocky Mountains. Elsewhere variable winds prevailed. The hurricane of the 28th caused winds with a maximum 5-minute velocity of 103 mis./hr. at Pensacola on that date.

TEMPERATURE.

At the beginning of September cool weather, with heavy frost, prevailed in the middle and upper portions of the Missouri Valley. During the next few days this weather extended eastward over most of the northern sections, but to the south warmer weather obtained. From the 6th to the 8th, another cool area overspread the northern third of the country from the Dakotas to the Atlantic coast. After a few days of somewhat warmer weather, a third decidedly cool area accompanied by heavy frost and freezing temperatures, moved southward from the Canadian Northwest; on the 11th it overspread the Eastern and Central States, with general frosts north of the 40th parallel and east of the upper Mississippi Valley. Cool weather then continued in the Atlantic States for several days, but at the same time warmer weather prevailed in Wyoming and adjacent States, while in most other central and western districts temper-

atures were close to normal. About the middle of the month cool weather again prevailed from Nevada to Montana, with occasional light frost; but on the 18th the temperature became high in the interior of the Pacific States, in the Dakotas and Minnesota; in the southeastern districts it was rather low. About the 20th cooler weather overspread the Missouri and upper Mississippi Valleys and, extending slowly eastward, reached the New England States on the 23d-24th. About this time warm weather prevailed over the central and northern plains, and cooler weather was experienced in Nevada and Utah, which during the next several days extended over the Rocky Mountain States and the upper Missouri Valley; likewise the weather in the Atlantic Coast States was cool for the season. During the closing days of the month cool weather obtained in the northern border States, while in California and from the middle Plains States to the southern Rocky Mountains Region it was warm for the season.

For the month as a whole the temperature was below normal east of the Mississippi River and in Iowa, Minnesota, and the northern portions of North Dakota and Montana. Elsewhere it was above the seasonal average. In Oregon and west-central California the average was 3 degrees or more above normal, while from the Lower Lakes southeastward to the Atlantic it was about 3 degrees below.

PRECIPITATION.

The month opened with cloudy, showery weather in portions of the Atlantic Coast States and the northern districts from Montana to Lake Superior, and during the next few days widely distributed rainfall occurred over the upper Mississippi Valley and Lakes Region, and from the Ohio Valley eastward and southward to the Atlantic and Gulf coasts, with large amounts locally in Texas, Iowa, and the southern Appalachian Mountains.

Rather heavy rains occurred on the 5th and 6th from Iowa to the Lower Lakes; on the 7th in the northeastern districts; and on the 8th in the Middle Atlantic States, the Ohio and upper Mississippi Valleys. In the western portions of Washington and Oregon the severe drought was broken. Irregularly distributed rains fell on the 11th and 12th in the South Atlantic and East Gulf States, the far Northwest, in Utah and Texas; on the 13th and 14th considerable rain occurred in the South Atlantic and East Gulf States, the upper Lakes Region, the upper Mississippi Valley, the northern and middle Rocky Mountain and Plateau regions, and North Pacific States. The rainy weather in the South Atlantic and East Gulf States continued until the 16th, with high winds and torrential rains over eastern North Carolina, and some rain occurred in the Middle Atlantic States and in eastern Texas on the 17th. During the next several days considerable rain fell in Florida and moderate amounts in Missouri and the upper Mississippi Valley. About the 22d and 23d good rains fell in the northern half of California and in parts of the northern Plateau region, and scattered showers occurred in the Lakes Region, the Ohio Valley, and Atlantic States, and rain continued, in Florida, almost every day until the end of the month. Light rains fell in portions of the Cotton Region on the 25th and 26th, and on the 27th and 28th there was rain in practically all eastern districts, with heavy amounts in the East Gulf States and southern Appalachians in connection with the tropical hurricane passing over western Florida on the 28th. Thence it continued its northeastward course, losing energy rapidly,

but accompanied by torrential rains over most of southern Alabama and extreme western Florida. September closed with heavy rains in the Carolinas, Georgia, and Florida, with light falls in the Lakes Region and to the eastward, and fair weather elsewhere, generally.

For the month as a whole, the precipitation was heavy over considerable portions of the South Atlantic and East Gulf States, and small areas in southeastern Iowa and northwestern Washington. Elsewhere rainfall was, as a rule, moderate to light, and quite extensive areas in California, Nevada, and northwestern Utah received no precipitation during the month.

RELATIVE HUMIDITY.

For the month as a whole the atmosphere was relatively drier than usual for September throughout much of the coastal portion of the New England, Middle Atlantic, and Gulf States, and likewise in California and Nevada. Elsewhere the relative humidity was generally above the normal, although in many small irregularly distributed areas it was lower than the seasonal average.

GENERAL SUMMARY.

On the whole, during September, 1917, the weather was favorable for farm work. Crops matured satisfactorily in the West and Northwest under generally favorable weather conditions, but it was too cool in the Central and Eastern States for the best development of vegetation; corn and other fall crops matured slowly. Plowing and seeding of winter grains made good progress.

The weather was too dry in some sections and too cool in nearly all portions of the Cotton Belt for the favorable development of cotton. Late potatoes and truck crops made good progress in most sections, and the ripening of fruit progressed satisfactorily. The weather was generally favorable for meadows and pastures, and live stock was in good condition.

Average accumulated departures for September, 1917.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	° F.	° F.	° F.	In.	In.	In.	0-10	P. ct.		
New England.....	57.9	-2.0	-11.8	1.84	-1.30	-1.50	4.6	-0.6	79	-2
Middle Atlantic.....	63.1	-3.4	-6.8	2.56	-0.80	-3.10	5.2	+0.5	66	-12
South Atlantic.....	70.8	-2.3	+3.3	5.99	+0.40	-6.30	6.1	+1.5	82	+1
Florida Peninsula.....	80.1	-0.6	+2.8	10.76	+2.80	-5.10	6.1	+0.9	80	-1
East Gulf.....	73.8	-1.1	+3.2	4.87	+1.50	-2.20	5.3	+0.8	77	-1
West Gulf.....	76.0	+0.2	+3.6	2.44	-1.20	-9.90	5.3	+1.2	73	-1
Ohio Valley and Tennessee.....	66.5	-1.5	-12.6	2.30	-0.50	+1.90	4.0	-0.4	75	+1
Lower Lakes.....	60.2	-2.9	-20.4	1.88	-0.90	-0.30	6.7	+1.8	74	0
Upper Lakes.....	57.4	-1.7	-25.2	2.32	-0.90	-3.10	5.0	-0.2	80	+2
North Dakota.....	56.9	-0.8	-13.9	1.12	-0.30	-8.20	5.0	+0.6	72	+3
Upper Mississippi Valley.....	63.5	-1.2	-19.7	2.77	-0.50	-1.40	4.5	+0.1	77	+2
Missouri Valley.....	66.6	+0.1	-8.2	2.51	-0.10	-3.20	4.4	+0.2	72	+4
Northern slope.....	58.4	+0.9	-17.6	1.43	+0.30	-1.00	4.3	+0.2	63	+4
Middle slope.....	68.6	+1.0	-4.8	1.21	-0.80	-5.30	3.3	-0.1	65	+4
Southern slope.....	73.7	+1.0	+5.0	1.41	-1.20	-5.20	3.9	+0.3	49	-16
Southern Plateau.....	72.0	+1.5	-7.9	0.40	-0.50	-1.50	3.2	+0.7	48	+6
Middle Plateau.....	63.5	+1.1	-27.0	0.51	+1.50	-1.50	2.5	-0.5	40	-2
Northern Plateau.....	64.0	+2.8	-15.2	1.48	+0.70	-0.70	3.9	+0.2	50	0
North Pacific.....	59.2	+1.6	-9.4	2.25	-0.20	-5.70	6.4	+1.0	82	+3
Middle Pacific.....	65.1	+1.7	-5.8	0.38	-0.20	-6.40	3.2	0.0	51	-12
South Pacific.....	70.5	+3.2	+2.5	T.	-0.20	-2.50	2.0	-0.7	62	-4

WEATHER CONDITIONS OVER THE NORTH ATLANTIC OCEAN DURING SEPTEMBER, 1916.

The data presented are for September, 1916, and comparison and study of the same should be in connection with those appearing in the Review for that month.

Chart IX (XLV-94) shows for September, 1916, the averages of pressure, temperature, and prevailing direction of the wind at 7 a. m., 75th meridian time (Greenwich Mean Noon), together with notes on the locations and courses of the more severe storms of the month.

PRESSURE.

The distribution of the average monthly pressure, as shown on Chart IX, was similar to the normal over the entire ocean, although the isobar of 29.85 inches that marks the southern limits of the Icelandic Low, was about 5° north of its usual position.

The North Atlantic or Azores HIGH, with a crest of 30.18 inches, was practically normal in all respects, and the continental HIGH, with a crest of 30.11 inches was central near Lynchburg, Va., extending as far east as the 67th meridian.

The pressure changes from day to day showed the usual autumnal variations in the higher latitudes, and in one 5-degree square as far south as the Azores, the barometric readings ranged from 30.45 inches on the 4th to 29.81 inches on the 30th. The following table gives for a number of selected 5-degree squares, the average pressure for each of the three decades of the month as well as the highest and lowest individual readings reported during the month within the respective squares.

Pressure over the North Atlantic during September, 1916, by 5-degree squares.

Position of 5-degree squares.		Decade means.			Extremes.			
		I	II	III	Highest.		Lowest.	
Latitude.	Longitude.	Inches.	Inches.	Inches.	Pres- sure.	Date.	Pres- sure.	Date.
60-65 N	20-25 W	29.88	29.95	29.72	30.33	Sept. 9	29.36	24
60-65 N	5-10 E	31.04	29.62	31.08	31.33	7	29.13	13
55-60 N	25-30 W	29.94	29.04	29.53	30.36	13	29.30	25
55-60 N	0-5 E	30.08	29.77	30.11	30.40	9	29.69	4
50-55 N	55-60 W	29.91	30.02	29.81	30.34	11	29.48	26
50-55 N	35-40 W	30.05	31.00	29.57	30.32	9	29.33	30
45-50 N	65-70 W	30.00	30.13	29.83	30.28	10	29.59	25
45-50 N	15-20 W	31.39	31.28	29.72	30.48	9, 10	29.50	25
40-45 N	70-75 W	30.07	31.18	29.96	30.50	11	29.78	2, 8
40-45 N	25-30 W	30.31	30.16	29.88	30.52	10	29.58	30
35-40 N	50-55 W	30.21	29.99	30.14	30.31	1	29.80	15
35-40 N	0-5 W	30.04	31.08	29.97	30.21	12	29.80	28
30-35 N	40-45 W	30.26	30.07	30.13	30.32	7, 9	29.90	15
25-30 N	35-40 W	30.18	30.12	30.08	30.32	4	29.97	24
20-25 N	45-50 W	31.10	30.06	31.09	30.24	26	29.90	30
15-20 N	15-20 W	29.96	31.03	30.01	30.12	14	29.87	10
10-15 N	25-30 W	29.95	30.02	29.98	30.16	23	29.86	10

The mean and extreme pressures presented in the above table are based on the daily pressure values, determined by interpolation, for each square as given on the MS. daily synoptic charts of the North Atlantic compiled by the Marine Section of the Weather Bureau.

GALES.

The month of September is usually characterized by uncertain and variable weather over the North Atlantic, and while the normal percentage of gales is not high, there is a large range in the number reported during different years.

For September, 1916, the number of gales was somewhat below the normal over the entire ocean with the exception of a small area near St. Johns, N. F., and in